

## Claims

1. A stainless steel for a metal gasket having a chemical composition consisting essentially of, in mass %,

C: at most 0.03%, Si: at most 1.0%

5 Mn: at most 2.0%, Cr: at least 16.0% and at most 18.0%,

Ni: at least 6.0% and at most 8.0%, N: at most 0.25%,

Nb: 0 - 0.30%, and a remainder of Fe and unavoidable impurities,

and having a duplex phase structure of martensite with an area ratio of at least 40% and a remainder of austenite, or a single phase structure of martensite, and

10 which can be used to manufacture a metal gasket having Hv of at least 500 and having chromium nitride precipitated in the martensite phase by aging after forming.

2. A stainless steel for a metal gasket as set forth in claim 1, wherein the chemical composition contains at least 0.1% and at most 0.30% of Nb.

3. A method of producing a stainless steel for a metal gasket characterized by  
15 including a step of performing final annealing of a cold rolled steel having the chemical composition set forth in claim 1 or claim 2 to form a recrystallized structure having recrystallized grains with an average grain diameter of at most 5  $\mu\text{m}$  having an area ratio of 50 - 100% and an uncrystallized portion having an area ratio of 0 - 50%, and a step of then performing temper rolling with a reduction of at least 30%.

20 4. A metal gasket comprising a stainless steel having the chemical composition set forth in claim 1 or claim 2 and having a duplex phase structure of martensite in which chromium nitride is precipitated with an area ratio of at least 40% and a remainder of austenite, or a single phase structure of martensite in which chromium nitride is precipitated, the gasket having Hv of at least 500.

25 5. A metal gasket as set forth in claim 4 on which rubber coating is performed.

6. A metal gasket as set forth in claim 5, wherein the gasket is for an engine.

7. A method of manufacturing a metal gasket comprising carrying out forming of the stainless steel of claim 1 or claim 2 or of the stainless steel produced by the method set forth in claim 3, and performing aging and rubber coating of the  
5 formed piece at 200 - 500°C.

8. A method as set forth in claim 7 wherein the aging is accomplished by heat treatment at a temperature of at most 350°C at the time of rubber coating.